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Update on Laser Pulse Arrival Time Measurements for XFEL Experiments

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While the time arrival stability of the electron bunches in an FEL can be as good as 5-10 fs rms, the arrival time of the optical laser pulses is on the order of 10 fs rms or worse. Here will be presented the update on a laser pulse arrival time monitor: the arrival time of the optical pulses will be measured against a reference from the laser-based optical synchronization system. With a measurement as close as possible to the interaction point, instabilities due to laser beam transport can be evaluated and corrected either by time-sorting experimental data or actively in a feedback loop.

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